

RE-1550



US006366002B1

(12) **United States Patent**
Kadota

(10) **Patent No.: US 6,366,002 B1**
(45) **Date of Patent: Apr. 2, 2002**

(54) **SURFACE ACOUSTIC WAVE DEVICE AND COMMUNICATION DEVICE**

(75) **Inventor: Michio Kadota, Kyoto (JP)**

(73) **Assignee: Murata Manufacturing Co., LTD, Kyoto (JP)**

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.: 09/654,113**

(22) **Filed: Aug. 31, 2000**

(30) **Foreign Application Priority Data**

Sep. 2, 1999 (JP) 11-248903

(51) **Int. Cl.⁷ H03H 9/15**

(52) **U.S. Cl. 310/313 A; 310/313 R**

(58) **Field of Search 310/313 R, 313 A**

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,914,645 A 6/1999 Kobayashi et al. 333/193
6,037,847 A * 3/2000 Ueda et al. 333/193

FOREIGN PATENT DOCUMENTS

EP	0353073 A2	1/1990	.....	H03H/9/02
EP	0734120 A1	9/1996	.....	H03H/9/02
GB	2244880 A	12/1991	.....	H03H/9/02
GB	2288503 A	10/1995	.....	H03H/9/64
JP	060164306 A	6/1994	.....	H03H/9/25
JP	9-153757 A *	6/1997	.....	310/313 A
JP	090018272 A	9/1997	.....	H03H/9/145
JP	10-247835	9/1998	.....	H03H/9/145
JP	10-335965 A *	12/1998	.....	310/313 A
JP	2001-77662 A *	3/2001	.....	310/313 A
JP	2001-355692 A *	5/2001	.....	310/313 A

* cited by examiner

Primary Examiner—Thomas M. Dougherty

(74) *Attorney, Agent, or Firm*—Keating & Bennett, LLP

(57) **ABSTRACT**

A surface acoustic wave device including a LiTaO₃ substrate, and an interdigital transducer is provided on the LiTaO₃ substrate. The interdigital transducer includes as a major component at least one of Au, Ag, Ta, Mo, Cu, Ni, Cr, Zn, and W, and the interdigital transducer has a normalized film thickness H/λ of approximately 0.05 or less so as to excite a shear horizontal wave.

20 Claims, 10 Drawing Sheets

